

Databases and SQL

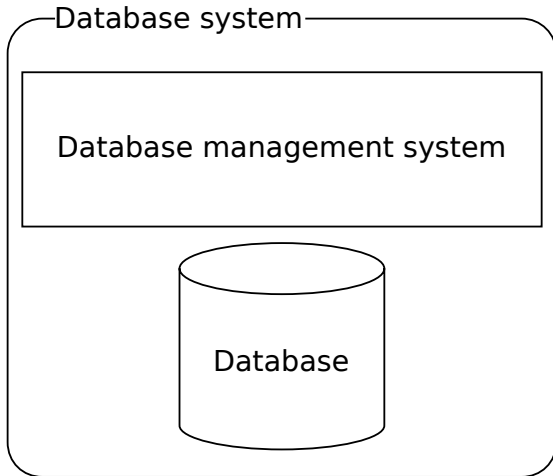
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06/12/2012

Database system



Database management system (DBMS)

- Controls the database
 - Creation
 - Maintenance
 - Use/Access/Manipulation
- Utilizes standards like SQL or ODBC
- Uses different database models
 - Hierarchical
 - Network
 - Relational
 - Multidimensional
 - Object

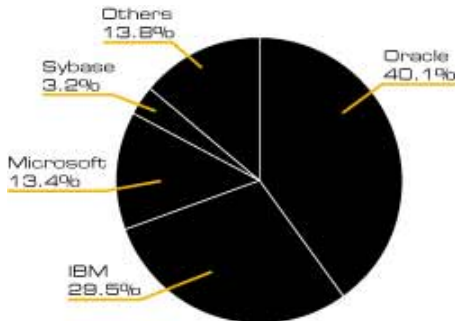
Advantages of a DBMS

- Controlling of data redundancy
- Elimination of inconsistency
- Better service to users
- Higher security
- Provides backup and recovery
- Requires development of data model
- Better performance

Famous DBMS

- Past
 - 1960s: IMS (IBM)
 - 1970s: System R (IBM)
- Current
 - Oracle Database (Oracle)
 - DB2 (IBM)
 - SQL Server (Microsoft)
 - Sybase ASE (Sybase, SAP)
 - PostgreSQL
 - MySQL
 - SQLite

DBMS market share (data of 2004)



Introduction to MySQL



- Open source
- Initial release in 1995
- Uses a relational network model (RDBMS)
- Written in C and C++
- Current version: 5.5.25 (stable)

Which ways exist to access a MySQL database?

- Command-line (MySQL monitor)

Example

```
>mysql [options] [database]
>mysql -u root
mysql>SET PASSWORD FOR 'root'@'localhost' =
PASSWORD('secret_password');
>mysql -u root -p
```

- Various programming languages (e.g. Java, PHP, Perl, etc.)
- Web-based (e.g. phpMyAdmin)
- GUIs (e.g. MySQL GUI Tools)

Which ways exist to backup a MySQL database?

mysqldump

```
>mysqldump [options] db_name  
>mysqldump [options] db_name table1 table2 . . . tableN  
>mysqldump [options] --databases [options] db_name1  
db_name2 . . . db_nameN  
>mysqldump [options] --all-databases [options]
```

mysqlhotcopy

```
>mysqlhotcopy [options] db_name pathtonew_directory  
>mysqlhotcopy [options] db_name_1 ... db_name_n  
pathtonew_directory
```

References

Thanks for your Attention!

References:

- MySQL (http://dev.mysql.com/tech-resources/articles/mysql_intro.html, <http://www.mysql.com/why-mysql/marketshare/>)
- Wikipedia (<http://de.wikipedia.org>, <http://en.wikipedia.org>)
- mcpmag (<http://mcpmag.com/articles/2005/12/01/sql-2005-the-integrated-stack-is-back.aspx>)
- dbmsbasics blog (<http://dbmsbasics.blogspot.de/2008/05/advantages-of-dbms.html>)